DOCUMENT RESUME

ED 313 689 CS 009 882

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TITLE The Effects of Cued Phrase Boundaries on Reading Performance: A Review.
PUB DATE 90
NOTE 45p.
PUB TYPE Information Analyses (070) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Cues; Literature Reviews; Meta Analysis; Prompting; *Reading Comprehension; Reading Improvement; *Reading Instruction; Reading Processes; Reading Research; Reading Strategies
IDENTIFIERS *Phrase Reading; Segmented Print (Reading); Text Factors

ABSTRACT

As in processing oral speech, proficient reading involves "chunking" written texts into meaningful phrase units. Unlike oral speech, however, cues for segmenting the written text at the proper points are not clearly marked in the text. One method for helping readers identify and use phrase boundaries is to mark such boundaries in the text. A study reviewed research conducted over the past four decades that has attempted to facilitate subjects' reading by providing marked cues to phrase boundaries. Although as a whole the research is not conclusive as to the efficacy of phrase-cued texts in aiding comprehension, it shows promise for helping improve the reading performance of at least certain types of readers, particularly for younger, poorer, and hearing-impaired readers. Phrase-cued texts seem to be facilitative for readers who have yet to achieve maturity in syntactic sensitivity. However, a level of competency in word recognition may be necessary before phrased texts can be effective. Issues to be explored in future research include topics such as points of transfer to and maintenance of facilitation on conventional texts. (One table of data is included and 73 references are attached.) (SR)

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The Effects of Cued Phrase Boundaries on Reading Performance: A Review

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Abstract

As in processing oral speech, proficient reading involves "chunking" written texts into meaningful phrase units. Unlike oral speech, however, cues for segmenting the written text at the proper points are not clearly marked in the text. One method for helping readers identify and use phrase boundaries is to mark such boundaries in texts. The present study reviews research conducted over the past four decades that has attempted to facilitate subjects' reading by providing marked cues to phrase boundaries. In general, the studies have found that texts cued to phrase boundaries do facilitate comprehension. This effect is particularly salient for younger, poorer, and hearing impaired readers. Limitations to the reviewed set of studies and issues to be considered in future research in this area are discussed. Among those issues are the as yet unexplored but critical points of transfer to and maintenance of facilitation on conventional texts.

Introduction

It is fairly well established that in processing oral speech listeners need to be sensitive to syntactic boundaries in the oral text. An important part of comprehending oral language involves syntactic processing or parsing the speech into phrasal units (Fodor, Bever & Garrett, 1974; Schreiber & Read, 1980; Schreiber, Read, & Walia, 1978). Clark and Clark (1977) suggest that listeners take in the raw or untransformed speech, identify syntactic constituents of the surface structure, and construct interpretations appropriate for each constituent. Listeners generally keep the constituents in working memory until a complete sentential interpretation is achieved, at which point the verbatim representation is cleared from memory and only a finished interpretation is retained. Syntactic analysis is an important component process in most models of language comprehension (e.g. Just & Carpenter, 1987).

Prosodic features embedded in speech (i.e., stress, juncture and intonation) appear to be the cues that listeners use to accomplish this parsing task (Kleiman & Schallert, 1978). A substantial body of literature has pointed to a correlation between syntactic structure and speakers' employment of such prosodic features as pause and final phrase lengthening in the comprehension process (Deese, 1984; Goldman-Eisler, 1972; Friedman & Johnson, 1972; Grosjean & Lane, 1977; Halliday, 1967; Hawkins, 1971; Martin, 1970; Read, Schreiber &

Walia, 1978; Schreiber & Read, 1980; Wilkes & Kennedy, 1969; and Wingfield & Klein, 1971).

Sensitivity to phrase boundaries seems also to be an important aspect of reading (Brown & Miron, 1971; Grosjean, Grosjean, & Lane, 1979; Johnson, 1965; Kleiman, Winograd, & Humphrey, 1979; Suci, 1967). Like listeners, proficient readers segment written discourse into meaningful "chunks" or phrases for optimal processing (Schreiber, 1980). This sensitivity to and use of phrase boundary information in reading has been shown to be developmental in nature (Aulls, 1977; Clay & Imlach, 1971; Kowal, O'Connell, O'Brien & Bryant, 1975; Resnick, 1970; Rode, 1974-75) and to distinguish between good and poor readers (Aulls, 1977; Clay & Imlach, 1971; Eagen, 1975; Kleiman, Winograd & Humphrey, 1979; Oakan, Wiener & Cromer, 1971; Rasinski, 1985).

Written texts, however, have the decided disadvantage of having less than optimal amounts of embedded prosodic information to help readers phrase texts (Adams, Anderson & Durkin, 1978; Fries, 1963; Kleiman & Schallert, 1978; Lefever, 1967). A major developmental task facing the novice reader is the transition from oral texts in which phrase boundaries are cued by prosody to written texts where phrase boundaries are generally left unmarked.

In order to segment texts readers must learn to compensate for the relative absence of observable cues to phrase boundaries in written texts (Allington, 1983; Schreiber, 1980; Schreiber & Read, 1980). Readers must learn to process texts

in phrase-like units without the help of prosodic information. For some less able readers, however, difficulties in parsing written texts may be one source of their reading problems (Allington, 1983; Schreiber, 1980). Indeed, Martinez, Ghatala, and Bell (1980) found that inducing poor readers to process text in meaningful units can improve comprehension. Schreiber (1980) has argued that the success of Samuels' (1979) method of repeated readings in facilitating poor readers' fluency and comprehension can be attributed to those readers' learning to infer phrase boundaries from cues other than prosody through their repeated exposures to one text.

Several recent studies of the effects of repeated readings have tended to support that notion. In their study of the repeated reading method on below average third-grade readers Koskinen and Blum (1984) found that the method led to improvements in oral reading fluency and in the number of semantically inappropriate miscues. They conclude that the method helped subjects utilize larger language or idea-bearing units in the text.

Herman (1985) found that a repeated readings treatment for less able intermediate-grade students led to fewer pausal intrusions within the passages that were practiced, thus suggesting greater sensitivity to phrasing in those passages. Using multiple measures of the ability to phrase text, Donhower (1987) reported improvements in phrased reading resulting from a treatment of repeated readings for transitional second grade readers. Moreover, these effects were found across passages

not part of the repeated readings regimen. Gains in subjects' rate, word recognition accuracy and comprehension were also noted.

These findings point to improvements in phrasing and general reading performance from a treatment consisting of repeated readings. This suggests that more direct instruction in phrased reading, through formating material in phrases and providing for practiced reading of the material, could be an appropriate and more effective alternative to independent or assisted repeated reading models (Dowhower, 1987). Such instruction would be consistent with models of reading that incorporate syntactic processing as an integral component.

Although not a particularly salient feature of current approaches to reading instruction, phrase reading instruction has long been an advocated method in reading education (Durrell, 1940). A not uncommon suggested practice has involved reading phrases in isolation (e.g. Dolch, 1949). One line of research by Amble (Amble, 1966, 1967; Amble & Butler, 1967; Amble & Kelly, 1970; Amble & Muehl, 1966), for example, found increases in reading comprehension for students exposed to an experimental treatment of viewing tachistoscopically presented phrases.

More recently, approaches that employ whole texts have been advocated for less fluent readers (Allington, 1983). One of these approaches involves the overt cuing of phrase boundaries in whole written texts for the reader. The theoretical rationale for this approach seems to hinge on poor

readers' less than adequate ability to perceive and use intrasentential phrase boundaries in texts. Whether this is due to poor readers' lack of competence in focusing on appropriate cues for phrase boundaries in written texts (Schreiber, 1980) or to too great a focusing of attention on word level elements of texts at the expense of phrase level elements (LaBerge & Samuels, 1972) has yet to be determined. The hope for this instructional strategy is that the phrase cues will force less fluent readers to devote greater attention to the phrased processing of written texts.

The present paper presents a review of literature related to the use of phrased cued texts to date and points to possible directions for future research. A review of this nature is significant from several perspectives:

1) Models of the reading process have included syntactic processors which parse or segment incoming information into syntactically appropriate phrases (e.g. Gough, 1972; Just & Carpenter, 1987; Rummelhart, 1977). Such models imply the possibility that instruction in pharsed reading may lead to improved reading performance, especially for readers who exhibit deficiencies in parsing written texts into appropriate units. The line of research reviewed here may provide some validation for models that employ a syntactic processor.

2) It has been argued that studies related to educational curriculum development should be guided by a sense of

the practical (Schwab, 1970). Inasmuch as reading difficulties continue to plagued large numbers of school students, research into methods for helping those students develop competency in reading is warranted. The studies reviewed here have been, in large part, guided by the practical consideration of improving readers' performance. Several of the studies have focused directly on students having reading problems. A review of the research on phrase-cued texts may help move curriculum developers toward a consideration of the value and place of phrase-cued texts in the reading curriculum. With the advent of new technologies incorporating flexibilities for displaying print (e.g. computers, interactive video), the practicality and possibility of using phrase cued texts in actual instructional settings has increased significantly.

3) The studies in the area of phrase-cued texts have been sporadic (few researchers have conducted more than one published study in the area), conducted over an extended period of time, and marked by great diversity in methodology. The review presented here attempts to consolidate information in this area so that future work may proceed and benefit from previous studies and past advances.

Because the research to be reported covers a considerable span of time, the review is initially organized chronologically

by subject type. A discussion of the literature and salient considerations for future work in this area will follow.

Research on Phrased-Cued Texts

One method for helping normal readers (Aulls, 1978; Durrell, 1940; O'Shea & Sindelar, 1983), disabled readers (Allington, 1983; Harris & Sipay, 1985), and hearing impaired readers (Gregory, 1982, 1986; Negin, 1987) identify phrases is to cue phrase boundaries in texts. The rationale for this approach lies with the notion that an important part of the reading process involves parsing incoming textual information into syntactically appropriate phrases or thought units. When such units are explicitly cued in the text the reader may more easily apprehend the text in the thought units (phrases) that are necessary for fluent reading and comprehension (Klare, Nichols & Shuford, 1957; North & Jenkins, 1951). Allington (1983) claims that this method for improving phrased reading has been successful in a clinical setting. Yet, he admits that the application of such methods has been guided more by intuition than empirical research findings. Several studies over the past four decades have tested the hypothesis that phrase-cued texts can have a facilitative effect on reading. These studies have had promising, but not necessarily conclusive results.

Studies of Adult Subjects

In an early study, Andrews (1949) suggested that a novel text format designed to capitalize on readers' vertical as well as horizontal perceptual span could improve readers'

performance. In this format, called square span, the text is arranged in two-line blocks set apart by spacing. Below is an example of square span.

The car was	by the	with one
driven	man	arm

Andrews found that college readers had slightly increased reading rates when reading square span as opposed to conventionally formatted text.

In a followup to Andrews (1949), North and Jenkins (1951) compared a conventional format against the square span and a style of presentation called the spaced unit. In the spaced unit "thought units" are set off by more than one blank character space. Like conventional text, the spaced unit retains the unilinear arrangement of words. Below is an example of spaced unit with two character spaces separating the phrases.

The car was driven by the man with one arm.

After one or two practice sessions, using a text in one of the three formats, North and Jenkins had three groups of college students read a test passage also written in the same format as that practiced. The dependent variables were reading speed and comprehension, as measured by test questions over the passages. Students reading the spaced unit text (two spaces separating phrases) outperformed students in the other two groups on both measures. Differences between the square span and conventional texts were not significant.

Nahinsky (1956), conversely, found an advantage for square span, over both spaced-unit and conventional formats. In this study, college students viewed tachistoscopically presented phrases in all three formats. The dependent comprehension measure was number of words recalled after each presentation.

Klare, et al. (1957) attempted to replicate the North and Jenkins (1951) study. Several modifications were made to the materials development and the experimental design. Instead of using arbitrarily defined "thought units," Klare, et al. were guided by a set of phrase parsing rules. For short units these rules were: a) subjects, predicates, and objects of simple sentences were separated; b) (prepositional) phrases were set off; c) noun modifiers and verb modifiers were linked to their respective nouns and verbs; and d) clauses were set apart and, if possible, parsed into shorter units. Five text types were also used. These included the conventional format and long and short phrase versions of the square span and spaced unit presentation. Although not explicitly stated, it appears from analysis of the example provided that five blank character spaces were inserted between each phrase on the spaced unit text. The adult subjects were divided into nine ability groups.

In the study the subjects were required to read a 1,206-word technical text without any prior practice using a text printed in one of the five text formats. Subjects represented a wide range of ability levels based on aptitude testing. Comprehension was measured using a 50 item multiple choice

test. The results of the study indicated that reading speed tended to favor the subjects reading the conventional text. The only significant differences in comprehension were for subjects reading the long phrase versions of the square span and spaced unit texts. High ability subjects using these formats outperformed similar ability subjects using conventional formats. Conversely, low ability subjects using the conventional format displayed better comprehension than low subjects using the experimental formats.

Coleman and Kim (1961) reported on two methodologically different experiments. In the first study college students read 1500+ word passages in one of several formats, after having some practice in that format. The formats used were a vertical arrangement which consisted of one or two words per line, a one phrase per line format, and a modified conventional format in which commas were set off by two character spaces and periods by three. Three spaced unit formats (two spaces between units) were also used in which units were defined in terms of clauses, clauses plus subjects, verbs, and objects, and prepositional, infinitive, and participial phrases.

The results of the first study indicated that subjects reading the vertical format read slower than subjects in the other conditions. In the comprehension measures (20 and 25 item comprehension tests) the subjects reading the one phrase per line and the spaced unit formats outperformed the subjects on the conventional text. However, the differences between groups was not statistically significant.

In the second experiment reported by Coleman and Kim (1961) texts were presented to subjects via a tachistoscope. Texts were arranged into either a vertical, spaced unit (two spaces between units), square span or conventional format. A practice session was included for each format. The dependent measure was the number of words recalled after each tachistoscopic presentation. Results indicated that all experimental formats were superior to the conventional format on the dependent variable. A followup study (Coleman & Hahn, 1966) found no facilitative effects for the vertical format.

In a study reported by Graf and Torrey (1966) a one phrase per line format was compared against a near conventional format. A written text was presented to college age subjects using a tachistoscope at a slightly higher than normal speed. The criterion measure was the number of multiple choice comprehension questions answered correctly. A statistically significant difference was found in favor of the one phrase per line format.

Epstein (1967) had college students read conventional and phrase-cued (vertical arrow markers embedded in spaced unit (e.g., He ate ↓ a big apple)) texts. An additional condition was also added. This was whether or not the subjects were instructed as to the nature of the reading task and the use of the phrase cues. Free recall of words in the text was used as the comprehension dependent variable. Epstein found that the phrase-cued text facilitated comprehension only when the subjects were given instructions into the use of the cues.

Anglin and Miller (1968) compared phrase-cued texts (one phrase per line) versus a more conventional format and long versus short phrases. Presentation of the texts was one line at a time. College students reading the phrased-cued texts had a 6% greater recall of words from the text then students reading the conventional format. No differences were reported for phrase length.

In the first two of three studies, Carver (1970) compared a conventional format with several variations of the spaced unit (two-three spaces between phrases) and one phrase per line formats. College age subjects read short texts in each format with no practice on any of the experimental formats. Results demonstrated that the conventional text was read faster (study 1 only) and that no differences in comprehension (as measured by multiple choice questions) between format types were found.

In the third study (Carver, 1970) a conventional format (termed newspaper style) was compared against a one phrase per line and a no capitalization-no punctuation format (absence of phrase cues). A practice version using Form A of the Nelson-Denny Reading Test in conventional format only preceded the treatment. Subjects were then given six minutes to read the Form B passages of the Nelson-Denny Reading Test written in one of the three formats. Dependent measures were reading rate and comprehension (multiple choice questions over the passages). Results indicated that students in the no capitalization-no punctuation condition performed at a significantly lower level in rate and comprehension than the other two formats. No

differences were detected between the conventional and one phrase per line groups.

Over a set of five experiments Frase and Schwartz (1979) compared adult and college students' performance on conventional and variations of phrase-cued (one phrase per line) technical texts. The comprehension measure used was response time to verify information in the texts. Results indicated that the subjects had significantly faster response times on texts that were meaningfully phrased.

Hypothesizing that chunking texts would be beneficial to even good readers, Brozo, Schmelzer, and Spires (1983) had college students who read above the 50th percentile on a standardized reading comprehension test read four passages which were written in either a phrased or a conventional format. Students were randomly divided into two equivalent groups. Students in the group reading the phrased passages were given instructions in using the phrase cues to help organize their reading. The phrases were identified by extra space between units and a slash line. Significant differences in comprehension were found in favor of the group reading the phrased texts. The authors suggest that even among good readers the ability to chunk or phrase texts efficiently is not universal. Instruction in organizing texts into phrases while reading is implicated.

Studies of Elementary and Secondary Student Subjects

In the first study using students who were not college students or adults, McBride (1976) had nine-year-old normal and

learning disabled readers read texts segmented into phrases. The purpose of the study was to compare different types of visual cues for phrases. Phrase boundaries were marked by red or black slashes or dots. Comprehension was measured using a form of the cloze procedure. McBride found that the various phrase cues were equally facilitative in fostering comprehension. Over several trials learning disabled students found the phrased text increasingly helpful as compared with normal students. However, because no conventional text was used, comparisons between phrase-cued and conventional texts were not possible.

Mason and Kendall (1979) studied fourth-grade students' reading performance on three text formats. These were conventional, one phrase per line, and short sentences. Mason and Kendall found that the comprehension performance (measured by multiple choice questions) of the poor readers improved in the experimental texts. Reading rate, when adjusted for syllables per passage, was not affected by text format.

Stevens (1981) had tenth-grade students read two versions of the Gates-MacGinitie Reading Test. Students were divided into ability groups by their performance on the vocabulary subtest of the Gates-MacGinitie. Form 1 was presented in a conventional format while Form 2 had meaningful phrases set off by vertical lines at phrase boundaries (Stevens, 1986). Students read both forms of the test. Stevens found that students' comprehension performance on the phrased text version of the test was significantly better than on the conventional.

This effect was true for all ability levels, but was especially pronounced for students Stevens identified as low and middle ability readers who had average improvements of seven percentile points.

Good, average, and poor readers in grades four and seven were the subjects in Weiss' (1983) study of text segmentation. Subject placement was based on performance on an achievement test. Students scoring between one half standard deviation below or above the mean were designated as average readers. Readers' performance was tested on texts whose segmentation was based on either syntactic rule or pause boundary. Comprehension, as measured by a cloze test, was the dependent variable. Conventional texts were compared with texts in a one phrase per line format. Weiss found that, regardless of how the text segmentation was determined, the segmented texts resulted in higher comprehension scores across both grades and all reading levels. This effect held even when reading rate and time to respond to the test items were used as covariates.

Using a computer monitor presentation of texts, Gerrell and Mason (1983) had fifth-grade students read conventional and phrase-segmented grade-appropriate texts. A ten point multiple choice comprehension test over the passages was used as the dependent variable. The results indicated significant differences in favor of the phrase-segmented text.

O'Shea and Sindelar (1983) found significant differences in readers' comprehension of conventional and spaced unit (five spaces between phrases) text formats. Using first, second and

third grade students, the authors had each student read texts of both types. The dependent variable was students' scores on a maze task. The phrase segmented text facilitated comprehension for students at all grade and ability levels. The effect was especially pronounced for students who were identified as being high in word recognition accuracy and low in reading rate.

Taylor, Wade and Yekovich (1985) compared conventional formatted texts and one phrase per line texts. Subjects were fifth-grade, low and high ability students. Ability levels were based on students performance on the SRA Achievement Tests. Students performing at the 3rd and 4th stanine were identified as poor readers, while those at stanines 6 and 7 were identified as good readers. The dependent variable was scores on free and probed recalls of the passages. The results indicate that the phrased text did not have a facilitative effect on comprehension. Even when subjects were given practice in the phrased text format their performance was not significantly above subjects reading the conventional format. Indeed, in one case, practice on the phrased text resulted in a substantial deficit in comprehension relative to the conventional text for poor readers. Taylor et al. did note that the phrased text did have the positive effect of reducing word identification errors in oral reading for both low and high ability students.

Studies of Hearing Impaired Subjects

Hearing impaired subjects do not normally have the benefit

of being exposed to oral speech. Thus they have not had the natural opportunities provided the hearing to hear syntactically phrased oral speech. Such subjects do not have the prior advantage of using prosodic signals in oral speech to identify phrase boundaries. Without previous experience in phrasing oral speech they may suffer to a greater extent than other groups from an inability to phrase written texts. Phrased texts, then, may be particularly beneficial for this group. Two recent studies have explored this issue.

Gregory (1986) studied the effects of phrased text on hearing impaired students, ages 10 through 17. Four text formats were used. These were near-conventional (one sentence per line), one phrase per line, fragmented phrases, and vertical listing of individual words. A comprehension test consisting of recall and recognition questions was the dependent measure. Gregory found that the subjects whose oral speech was itself phrase-like as opposed to staccato or word-by-word were aided more in comprehension by the phrased texts than the conventionally formatted passages.

In a related study, Negin (1987) investigated the facilitative effects of phrased texts on hearing impaired students' comprehension. Differing from Gregory (1986), the phrase segmentation cue was a blue vertical line inserted at phrase boundaries in two texts printed in conventional manner. Negin argued that this method of text segmentation had greater ecological validity since a teacher could easily insert lines into conventional texts. Other methods of text segmentation

(e.g. spaced unit, one phrase per line) require retyping the text. Both expository and narrative texts were used in the study. Comprehension was measured using literal and inferential multiple choice questions. Negin found that students reading the phrased texts had significantly greater levels of comprehension than students reading conventional forms of the same passages.

Discussion

A tabular summary of the investigations of phrase-cued texts is provided in Table 1. When possible effect sizes (Glass, McGaw, & Smith, 1981) for the studies were calculated.

Given the necessity for syntactic processing that is present in most models of reading and the notion that knowledge of and skill in parsing written texts into syntactically appropriate units may be limited for some readers (Schreiber, 1980), it follows that texts that incorporate supplementary phrase cuing systems should facilitate reading performance, especially for those readers who have less well developed syntactic knowledge. In general, the studies reported here tend to confirm the above assertion. The phrase-cued texts seemed to have, in general, a facilitative effect on reading. This was particularly true when developmentally less mature readers were given phrase-cued texts. These readers may have had less well developed syntactic knowledge. The phrase-cuing, then, may have been particularly helpful in overcoming the lack of knowledge about syntactic parsing in written texts where prosodic information does not provide clear cues to

phrase boundaries. Thus, this review provides support for models of the reading process that incorporate syntactic processors or the on-line use of syntactic knowledge.

Insert Table 1 about here.

Only one study found no facilitation effects for phrase-cued texts (Taylor, Wade, & Yekovich, 1985). The authors suggest that one reason for the lack of a text effect was due to the manner of comprehension measurement. Taylor et al. used a free recall mode for comprehension measurement while previous studies used recognition techniques (e.g., multiple choice tests). The authors felt that the recognition techniques cued the subjects as to the content of the text. A more recent study, however, casts some doubt on this explanation. Gregory (1986) used both recall and recognition techniques to measure comprehension. He found that the facilitative effect for phrased texts was demonstrated only when a recall measured was employed. Similar results were reported by Epstein (1967).

An alternative explanation for the lack of significant effects for Taylor et al. may lie with the issue of word recognition. O'Shea and Sindelar (1983) note that the facilitative effects of phrased-cued texts was most apparent when the subjects had adequate word recognition abilities. This is supported by the Negin (1987) study which insured that subjects could adequately recognize the words in the passages to be read prior to having them read the selections. Given

that in Taylor et al. (1985) subjects' made significantly fewer word recognition errors in the phrased text condition. This may suggest that students were having sufficient word recognition difficulties in reading the texts to take attention away from the text phrasing and comprehending tasks. Moreover, since the subjects' readings of both texts were apparently in an oral mode and tape recorded, subjects may have been focusing more on correct word identification than comprehension. This explanation is in accord with the notion that adequate word recognition skills are required for phrase-cuing to be facilitative and with models of reading that require words to be recognized before syntactic knowledge can be applied.

Taken as a whole these studies suggest that phrase-cued texts do hold the pragmatic promise of helping readers comprehend text passages. Only in the last half of the series of studies reported here have investigators looked at the effects of phrase-cued texts on subjects below college level. These studies have largely supported the notion that phrase-cued texts facilitate comprehension in school-age children and adolescents. It is worth noting, at this point, that in the studies in which effect sizes could be calculated, subjects were not provided opportunities to practice reading phrase-cued texts. Past experience by this author in providing students this type of text suggests that students find initial encounters bothersome. It is reasonable to suspect, then, that had practice been provided effect sizes may have been substantially larger.

In sum, this review of research suggests that phrase-cued texts hold promise of helping readers, especially less fluent readers, process texts. Further research in this area is required, however, in order to confirm or reject that assertion. Several issues in this research paradigm need to be resolved in order to provide optimal phrase-cued text experiences for readers. These will now be considered.

Level of Reading Ability and Other Reader Characteristics

Do all readers, regardless of age or reading level, benefit from phrase cued texts? One possible reason for the lack of consistent facilitative effects for college age or adults may be that most college age and adult readers are already beyond difficulties in reading fluency (Carver & Hoffman, 1981). They may already be proficient in their ability to parse texts into meaningful phrases.

Research with students below tenth-grade points to the comprehension benefits of reading phrase-cued texts. Lower achieving students, in particular, seem to demonstrate gains in comprehension from phrased texts. Hearing impaired students also, seem to benefit significantly from the phrase-cued texts. It appears that younger, less able, and hearing impaired students may have yet to master the various syntactic constructions necessary for optimal processing of textual material.

A prerequisite ability, however, may also be at play. Some research appears to suggest that readers need to have some competence in word recognition abilities before they can

optimally benefit from phrase-cued texts (O'Shea & Sindelar, 1983; Rasinski, 1985). Other research, however, has not found differential effects for phrase-cued texts by manipulations of word recognition abilities (Weiss, 1983). Further research into comparing the use of phrased texts with subjects of differing reading levels and word recognition competencies will help clarify these issues.

Practice

Most of the studies reported here did not permit students practice on the phrase-cued texts, even when those texts may have appeared quite foreign, and even mutilated, to the subjects. Those studies that did provide practice, in general, allowed only a minimal amount.

It seems reasonable to suggest that providing practice and explanations into the nature of phrase-cued texts will enhance performance on those texts (Coleman & Kim, 1961; Epstein, 1967; Weiss, 1983). Further research may wish to determine the effects of substantive practice with the phrased texts on subjects' subsequent performance on phrase-cued texts.

Length of Phrase Unit

An issue of critical importance is the determination of the appropriate phrase length to use in phrase-cued texts. Previous work suggests that readers increase the size of their processed phrase unit over time (Kowal, O'Connell, O'Brien, & Bryant, 1975; Rode, 1974-75). Rode, for example, suggests that with increased maturity in reading the clause supplants the phrase as the optimal unit for processing.

It may be that with increased reading ability the optimal size of the phrase unit may also increase (e.g., Klare, et al., 1957). Weiss (1983), however, offers some evidence to the contrary. He had fourth- and seventh-grade students read two phrased texts in which the meaningful phrases of one were longer than the other. Weiss found that both phrase types were equally facilitative for his subjects.

Further research, then, is needed to determine if phrase length affects reader performance. And, if phrase length is an important factor, research should determine the optimal unit size for readers of various ages and abilities. An accompanying problem lies in the determination of the phrases themselves. Studies that use rules to determine phrases, as opposed to a consensus technique, should identify those rules so as to make replications and comparisons possible.

Phrase Unit Cue

The studies reported here have employed a variety of devices to signal phrase boundaries to readers. These have included spaced units of various size, the ends of lines, diagonal slash marks, vertical lines, dots, and color codes. It should be apparent that some cues are more salient to the reader than others. Phrases that are cued by an end of the line or a short spaced unit are more subtle in nature than slash marks or vertical lines. It is interesting to note that those studies in which little or no facilitation for phrased texts was found (Carver, 1970; Coleman & Kim, 1961; Taylor et al., 1983) employed the more subtle phrase cues (one phrase per

line and spaced unit).

Future research efforts should attempt to identify the optimal cue for signalling phrase boundaries. The cues tested may be singular or combinations of cues (e.g., spaced unit plus slash mark). Differing cue types may also be found to be optimally effective with differing types of readers.

The type of phrase cue also has pragmatic implications. Cues that involve the placing of dots, slashes, or vertical lines can be accomplished by teachers on existing reading materials. Other cues involve the typographical rearrangement of texts. Spaced unit or one phrase per line formats, for example, would require a conventionally formatted text to be retyped or reprinted. Thus, phrase-cued texts that employ cues that involve typographical alterations of the text would, for practical purposes, have to be made available through commercial publishers.

Transfer

A critical issue that has not been considered in the reported research is transfer of effect. Unless readers using a particular text format will forever read only material in that format (an unlikely possibility) the effects of phrase-cued texts must transfer to conventionally formatted texts for the phrase-cued text experience to be worthwhile. Reading phrase-cued texts must help sensitize readers to the importance and procedures for reading in phrased units. This sensitivity and behavior must transfer to texts that are written in the conventional format.

Future research is needed to investigate this important question. After training periods on phrase-cued texts, measures of readers' sensitivity to phrases, reading speed, and comprehension on conventional passages should be taken.

Maintenance

The question of maintenance must be addressed from two viewpoints. First, after initial exposures to phrase-cued texts prove facilitative, do future exposures to the same format maintain the facilitation? In other words, is a Hawthorne or novelty effect at play? Do subjects perform better on the phrase-cued text because it is novel or because it actually informs readers' sense of phrasing? This is an important issue that has yet to be addressed in the research reviewed here.

Second, given that a transfer effect is established, do readers maintain their improved sensitivity to phrase boundaries in conventional texts over time? Or, over lengthy exposures to conventional texts, do readers who have had phrase-cued training revert back to a relative insensitivity to phrase boundaries in conventional texts. These issues need to be explored before the use of phrase-cued texts can be fully validated.

Methodological Issues

Future work in this area needs to be more considerate of several issues related to methodology and reporting of results. Two issues that may have hampered progress in this area are related to size of treatment effects and identification of

groups for treatment.

A useful index to the strength or potency of treatments is effect size. Means and standard deviations are needed to calculate effect sizes. For the most part, such descriptive statistics have been missing from previous research in this area.

The second methodological issue relates to the specification of groups for treatment. This review suggests that phrase-cued texts may be especially facilitative for a particular group of readers. Thus, correct identification of members of that group is crucial. In what was thought to be a landmark study, Cromer (1970) identified two groups of poor adult comprehenders. One group had good vocabulary skills while a second had poor vocabulary skills. Cromer found that phrased text facilitated comprehension for the first group which he identified as difference readers. However, in a review of this study by Calfee, Arnold and Drum (1976) it was pointed out that serious problems in identifying the so called difference reader group plagued the study. One method for identifying the difference group results in quite different conclusions than those suggested by Cromer.

In recent years only a handful of studies have been reported on phrase-cued texts. In addition to being a topic out of the mainstream of reading research and lacking a comprehensive summary and discussion, it is likely that the negative reaction to Cromer's (1970) study resulting from the Calfee, et al. (1976) review has tended to stifle further

research in this area. Future researchers need to be sensitive to issues related to group identification and should report descriptive statistics that allow considerations of effect magnitude to be made.

In addition to the above-mentioned concerns, measures of dependent variables (comprehension and fluency) should reflect recent advancements in the measurement of reading variables. Some of the findings of studies reported in this review were based on measurements of reading performance that were, at best, limited.

Summary and Conclusion

This study has reviewed research over the past four decades into phrase-cued texts as a means for facilitating reading performance. Although, as a whole, the research is not conclusive as to the efficacy of phrase-cued texts in aiding comprehension, it shows promise for helping improve the reading performance of at least certain types of readers. Phrase-cued texts seem to be facilitative for readers who have yet to achieve maturity in syntactic sensitivity and appear to be particularly helpful for less fluent readers. It was pointed out, however, that a level of competency in word recognition may be necessary before phrased texts can be effective. Further research into the use of phrased texts is now called for. Several important issues for further research into phrase-cued texts are identified and discussed.

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Table 1
Summary of Studies on Phrase Cued Texts

Studies of Adults	Practice ?	Phrase Boundary Cues*	Effect of Phrase Cued Texts on Comprehension**			Effect of Phrase Cued Texts on Rate**		
			Un-differentiated Sample	Good Readers	Poor Readers	Un-differentiated Sample	Good Readers	Poor Readers
Andrews	N	C SS				+		
North & Jenkins	Y	C SU (2 spaces) SS	+(SU)			+(SU)		
Nahinsky	N	C SU (7 spaces) SS	+(SS) (.83)					
Klare et al.	N	C SU (5 spaces) SS		+	–	–		
Coleman & Kim-A	Y	C OPPL SU (2 spaces) V				- (V)		
Coleman & Kim-B	N	C OPPL SU (2 spaces) V	+					

Graf & Torrey	N	C OPPL	+					
Epstein	N	C VMA + SU	+ (only S's given instructions)					
Anglin & Miller	N	C OPPL	+					
Carver	N	C OPPL SU (2-3 spaces)				-		
Frase & Schwartz	N	C OPPL	+					
Brozo, Schmelzer & Spires	Y	C SU + SL		+ (.32)				
Studies of Elementary and Secondary Students								
McBride	Y	D SL			+			
Mason & Kendall	N	C OPPL SMS			+			

Stevens	N	C VL	+(.42)	+	+			
Weiss	N	C OPPL		+	+			
Gerrell & Mason	N	C UPBC	+(.32)					
O'Shea & Sindelar	N	C SU (5 spaces)	+(.31)	+	+			
Taylor et al.	Y	C OPPL		-	-			
Studies of Hearing Impaired Students								
Gregory	N	C FP OPPL V	+(OPPL) (only S's with phrased speech)					
Negin	N	C VL	+(1.07) (narrative) +(1.31) (expository)					

**effect sizes are reported in parentheses when able to be calculated

- **C** = Conventional Format
- **D** = Dots
- **FP** = Fragmented Phrases
- **OPPL** = One Phrase Per Line
- **SL** = Slashes
- **SS** = Square Span
- **SU** = Spaced Unit
- **SHS** = Short Sentences
- **UPBC** = Unidentified Phrase Boundary Cue
- **V** = Vertical
- **VL** = Vertical Lines
- **VMA** = Vertical Marker Arrows